**Software Design  
Document**

for

Chess Game

Version 1.0 approved

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# Introduction

* 1. **Purpose**

This program is intended to mimic a game of chess, following standard chess rules including piece movement.

## 1.2 System Overview

Each piece will be its own class, inheriting its functions from a ‘piece’ class. The board will be managed by a database which will be updated by a manager class. The board will update and redraw based on changes to the database.

## 1.3 Definitions, Acronyms and Abbreviations

* Castling – Castling consists of moving the King two squares towards a Rook on the player's first rank, then moving the Rook to the square over which the King crossed. Castling may only be done if the King and Rook involved have not moved this game, the squares between the King and the Rook involved are unoccupied, the King is not in check, and the King does not cross over or end on a square in which it would be in check.
* Check – A state in which the King will be taken in the opponent’s next move. The side in check may not end their move with their King still in check.
* Mate – End of the game. The King is mated when check state cannot be removed via legal moves.
* Bishop – Each player starts the game with two Bishops. White having them start on squares c1 and f1, and black having them start on squares c8 and f8. The Bishop can only move diagonally and will always stay in squares of the same color it started the game in (a Bishop starting on a white square will never move into a black square).
* King – The King is the most important piece in the game, a mated King ends the game with the mated King’s side losing. Each player only has one King, white having it start on e1 and black having it start on e8. The King can only move one space horizontally, diagonally, or vertically. The King cannot move into a position that would cause it to be in check.
* Knight – Each player starts the game with two Knights. White having them start on squares b1 and g1, and black having them start on squares b8 and g8. The Knight moves by first moving 1 square horizontally or vertically, then 1 square diagonally in an outward direction. The Knight may also jump over pieces of either color to reach its destination.
* Pawn – The lowest value piece in a chess game that can move one square forward (or two on its first move) and can only capture another piece when moving one square diagonally. Each player starts with eight Pawns on the second rank of the board from each players perspective. If a Pawn reaches the opponent's end of the board it can be promoted to any other piece.
* Queen – Each player starts the game with only one Queen. White having it start on square d1 and black having it start on square d8. The Queen may move horizontally, vertically, and diagonally any number of squares but may not jump over pieces.
* Rook – Each player starts the game with two Rooks. White having them start on squares a1 and h1, and black having them start on squares a8 and h8. The Rook can only move horizontally or vertically across the chess board.
  + This portion will be updated as necessary as the document grows.

## 1.4 Supporting Materials

1. Bodlaender, Hans. “The Rules of Chess.” The Chess Variant Pages, [www.chessvariants.com/d.chess/chess.html](http://www.chessvariants.com/d.chess/chess.html)
2. “Chessboard.” Wikipedia, Wikimedia Foundation, 24 Jan. 2018, en.wikipedia.org/wiki/Chessboard.

This portion will be updated as necessary as the document grows.

## 1.5 Document Overview

# Architecture

<The architecture provides the top level design view of a system and provides a basis for more detailed design work. This is the section where you should include your High-Level design Component Diagram.

# Overview

<This section provides a high level overview of the structural and functional decomposition of the system. Focus on how and why the system was decomposed in a particular way rather than on details of the particular components. Include information on the major responsibilities and roles that the system (or portions of it) must play.

# Component 1..n

<Describe an element (subsystem, component, etc...) from architecture in further detail. When appropriate, include information on how the element is further broken down and the interactions and relationships between these subcomponents.

# High-Level Design

<This section describes in further detail elements discussed in the Architecture. Normally this section would be split into separate documents for different areas of the design.

High-level designs are most effective if they attempt to model groups of system elements from a number of different views.

## View / Model Component 1..n

<Provide a description and diagrams of a system component or set of components that describes a clearly defined view or model of the entire system or a subset of the system.